

REMARKS

This application has been carefully revised in light of the Examiner's Action dated January 24, 2003. All of the pending claims have been amended directly or via dependency. Claims 34 and 35 have been added to the application. No new matter is added by this response.

5 Reconsideration and full allowance are respectfully requested.

Claim Rejections – 35 USC §112:

Claims 1-32 stand rejected under 35 USC § 112. Claims 1-32 are believed to be allowable as presented. Applicant respectfully requests that this rejection be withdrawn.

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Claim Rejections – 35 USC § 102:

Claim 33 stands rejected under 35 USC § 102(b) over U.S. Patent 5,691,037 (McCutcheon). Claim 33 is believed to be allowable as presented and applicant respectfully traverses this rejection for the reasons set forth in detail below.

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Independent Claim 33 sets forth a method of mounting an acoustic blanket to a structure so as to provide edge separation at the edge of the blanket. In particular, the method involves providing a plurality of separate standoffs and connecting those standoffs to a structure so that individual ones of the plurality of standoffs are collocated with individual ones of a plurality of apertures in the perimeter of the blanket. The method further includes the steps of passing the

20 fasteners through the apertures and connecting the fasteners to the standoffs to secure the acoustic blanket to the standoffs so as to define an air gap between at least portions of the perimeter of the blanket and the structure. Furthermore, the air gap at the perimeter portions is set forth as being at the outer edge of the blanket and provides a separation between the blanket and the structure that is free from any connecting support structure. At least one benefit of this

configuration is that individual blankets may be connected to the structure in an edge-to-edge manner as set for the in Applicant's specification to define a continuous acoustic layer without the use of a frame, which is undesirable due to weight.

Applicant has reviewed McCutcheon and respectfully requests reconsideration of the
5 outstanding rejection, as McCutcheon does not disclose the combination of elements and/or limitations required by Claim 33. Among other things, McCutcheon does not disclose providing a plurality of standoffs and connecting the standoffs so that they are collocated with corresponding apertures in the perimeter of a blanket, and connecting fasteners to the standoffs to secure the blanket and define an air gap between portions of the perimeter to provide a
10 separation between the blanket and the structure that is free from any connecting support structure therebetween. Accordingly, McCutcheon does not achieve the attendant advantages as discussed above including edge-to-edge blanket mating without a frame.

In this regard, McCutcheon discloses the use of screws 11 to connect and locate a top cover 6 of a disk drive to the unit that rotates the disks for a read/write head (i.e. the spindle 13)
15 and the unit that moves the read/write head (i.e. the actuator 15) across the disks of the spindle 13 (See McCutcheon col. 20, lines 27-37) so that the cover edges are flush with walls of the disk drive. Because McCutcheon is directed to a disk drive cover 6, the outer spindle 13 and actuator 15 are not collocated with apertures in the outer edge to define an edge air gap, but rather, the outer edge portions are attached to a wall. The outer edge of the cover 6 is connected to the base
20 9 of the disk drive, which is a solid wall and therefore does not define or include an air gap. (See McCutcheon, Figures 1 and 2 and Col. 20 lines 24-27). Therefore, Applicant respectfully requests reconsideration of the outstanding rejection and allowance of Claim 33, as McCutcheon does not teach or disclose the combination of claimed elements.

Claim Rejections – 35 USC § 103:

Claims 1-32 stand rejected under 35 USC § 103(a) over U.S. Patent 5,300,178 (Nelson) in view of U.S. Patent 4,940,112 (O'Neill) in view of U.S. Patent 5,039,567 (Landi) and in view of McCutcheon. This rejection is respectfully traversed for the reasons set forth below. In the following discussing, this rejection is separately addressed with respect to each claim set.

With regard to independent Claim 1, Applicant respectfully requests reconsideration of the outstanding rejection because among other things: (1) Nelson, Landi, O'Neill and McCutcheon do not disclose the claimed combination of elements, (2) there is no motivation or suggestion to combine the teachings of Nelson, Landi, and O'Neill, and (3) these patents actually teach away from Applicant's invention and from the combination proposed by the Examiner.

Claim 1 is directed to a blanket system including two PTFE impregnated fiberglass sheets heat sealed together at their edge portions to at least partially encapsulate at least one Polyimide foam panel. As discussed in the application, the claimed invention provides an acoustic blanket that is simple to manufacture, easy to connect, that is lightweight, and operable to provide acoustic attenuation over a significantly broad frequency range, e.g., above and below 500 Hz, under extreme temperature, vibrational, and gravitational conditions. This subject matter is not disclosed or suggested by the cited patents and the cited patents therefore do not achieve the attendant advantages.

Nelson:

Nelson addresses "acoustic insulation for air compressors and similar machinery". (See Nelson Col. 2, line 64 to Col. 3 line 2). In this regard, Nelson is specifically directed toward solving the problems associated with using fiberglass insulation for acoustic attenuation for air compressors, which includes primarily water absorption and structural break down/fiber loss.

(See Nelson Col. 2, Lines 31-46). Accordingly, Nelson teaches using plastic PVC covers that are heat sealed to prevent water absorption and the break down and escape of enclosed fiberglass material. Nelson therefore does not disclose or suggest a blanket system including two PTFE impregnated fiberglass sheets heat sealed together at their edge portions to at least partially encapsulate at least one Polyimide foam panel. Indeed, Nelson does not teach any of the claimed material system.

O'Neill:

O'Neill deals with another problem in the art of acoustic attenuation, namely, smoke and fire resistant acoustic attenuation composites. (See O'Neill's Abstract). Accordingly, O'Neill teaches a laminate structure of Polyimide film, Polyimide foam, and a fire retardant sheet attached by adhesives. Accordingly, O'Neill does not disclose or suggest a blanket system including two PTFE impregnated fiberglass sheets heat sealed together at their edge portions to at least partially encapsulate at least one Polyimide foam panel.

Landi:

Landi is not related to acoustic blankets, but rather, is directed toward a honeycomb structural panel. Accordingly, Landi teaches facing sheets bonded to a honeycomb panel. Landi does not suggest a blanket system including two PTFE impregnated fiberglass sheets heat sealed together at their edge portions to at least partially encapsulate at least one Polyimide foam panel.

McCutcheon:

As discussed above, McCutcheon is directed to a disk drive cover. McCutcheon does not disclose or suggest the various materials set forth in Claim 1, much less the specifically claimed

combination that yields the above-noted advantages. Specifically, McCutcheon does not disclose or suggest a blanket system including two PTFE impregnated fiberglass sheets heat sealed together at their edge portions to at least partially encapsulate at least one Polyimide foam panel.

5 Applicant therefore submits that none of the cited patents discloses or suggests a blanket system including two PTFE impregnated fiberglass sheets heat sealed together at their edge portions to at least partially encapsulate at least one Polyimide foam panel. Accordingly, the proposed combination, even if proper, would not yield the claimed subject matter. For this reason alone, Applicant submits that this rejection should be withdrawn with respect to Claim 1
10 and its dependent claims.

The Proposed Combination is Improper:

One skilled in the art would not look to the teachings of Nelson, O'Neill, and Landi in light of the significant difference in the problems addressed therein and by the present invention
15 as well as practical considerations counseling against (teaching away from) such combination. Considering first Landi, one skilled in art would not be motivated to consider Landi in the combination proposed by the Examiner because it is directed to significantly different problems in a different field, e.g., formation of a honeycomb structural panel, not an acoustic blanket.

It is difficult to imagine how a skilled artisan would even become aware of Landi, other
20 than by doing an after the fact material term search improperly using the teaching of the present application. Accordingly, this combination is improper and the rejection should be withdrawn.

Nelson is also directed to significantly different problems from the present invention or other patents relied upon by the Examiner, namely using a heat sealed plastic cover to contain fiberglass and shed water for machine insulation. In contrast, the present invention uses

Polyimide foam, which, as discussed in Applicant's specification, is environmentally friendly, and does not require the use of protective masks, as fiberglass insulation does. In other words, one skilled in the art would not be motivated to consult Nelson for how to contain fibers or prevent moisture and Nelson does not otherwise disclose a motivation for the heat sealed sheets.

5 That is, once the fiberglass was replaced in Nelson with Polyimide foam as the Examiner has suggested, encapsulating the foam in plastic should serve little or no purpose other than to practice Applicant's invention. Rather, it is only applicant's teachings that provide a reason to look at Nelson and Applicant respectfully submits that the proposed combination is therefore improper.

10 O'Neill is directed to significantly different problems having significantly different considerations than the present invention or the other cited patents, namely smoke and fire resistant acoustic attenuation composites for aircraft skins. McCutcheon, as described above, is directed to a disk drive cover. In any event, such combination is improper for the reasons noted above.

15 The cited patents are thus respectively directed to honeycomb structural panels, plastic laminated fiberglass insulation, smoke and flame retardant aircraft structures and disk drives. The only plausible reason for the proposed combination is that one was motivated by the teachings of the present invention. This is an improper hindsight analysis and Applicant therefore respectfully submits that this rejection should be withdrawn.

20 The office action posits that "[t]he motivation to make these combinations is found in Nelson, who selects an outer layer to minimize reactivity (PTFE is virtually chemically inert)." Applicant respectfully disagrees. Nelson does not teach or suggest the use of PTFE impregnated fiberglass in combination with Polyimide foam in a heat sealed manner. Rather, Nelson specifically teaches away from the present invention in that it teaches the use of plastic PVC

cover material and not PTFE impregnated fiberglass. Applicant notes that Nelson teaches the use of a polymeric plasticizer in combination with the PVC cover material so that a pressure sensitive adhesive tape may be attached to the PVC cover material for use in attaching the compressor insulation arrangement disclosed therein to an air compressor casing. (See Nelson
5 Col. 7 lines 12-21). Thus, Nelson teaches away from the invention in that it specifically teaches using a heat sealed plastic PVC cover material and not heat sealed PTFE impregnated fiberglass.

To the extent the office action is suggesting that because, polymeric plasticizers (which there are many examples of) and PTFE (which is an individual one of many polymer based materials), have a common property, there is a suggestion or motivation to combine, Applicant
10 respectfully posits that this is an incorrect "obvious to try" standard. See *In re Gurley*, 27 F.3d 551, (Fed. Cir. 1994).

The office action also posits that a motivation or suggestion to combine the references is found in O'Neill's recitation that Polyimide foam is stable at high temperatures and has good sound attenuation. The mere recitation of a known characteristic of Polyimide foam, however,
15 does not provide the requisite motivation or suggestion to combine Polyimide foam and PTFE impregnated fiberglass in a heat sealed manner. Applicant respectfully notes that the above-recited characteristic of Polyimide foam was known over 20 years prior to the filing date of O'Neill, and was presumably known to the inventors of O'Neill as well, yet O'Neill includes no suggestion in this regard. Furthermore, there are numerous materials that are stable at high
20 temperatures and have good sound attenuation properties. In this regard, Applicant again respectfully posits that the office action utilizes the above recited incorrect "obvious to try" standard. As set forth in the application, Polyimide foam was chosen because it addressed the issues of being inexpensive, an efficient acoustic absorbing material that provides the advantages of being extremely lightweight (8 kg/m^3), flexible, resilient over a wide temperature range, a

good thermal insulator, and environmentally friendly, requiring no protective clothing or respiratory masks during manufacturing of the blanket. (See Application pg. 8, lines 11-16).

Therefore, Claim 1 is allowable for, among other reasons, at least the reasons that (1) Nelson, Landi, O'Neill and McCutcheon do not disclose or suggest the claimed structure, (2) there is no motivation or suggestion to combine the teachings of Nelson, Landi, O'Neill and McCutcheon and (3) practical considerations teach away from the proposed combination. Claims 2-11 depend from Claim 1 and are therefore allowable for at least the same reasons for allowance of Claim 1.

10 **Independent Claim 12:**

With regard to Claim 12, Applicant respectfully requests reconsideration of the outstanding rejection because: (1) Nelson, Landi, O'Neill and, McCutcheon do not disclose the claimed combination of elements, (2) there is no motivation or suggestion to combine the teachings of Nelson, Landi, O'Neill, and McCutcheon as the Examiner has proposed, and (3) practical considerations counsel against such a combination.

Claim 12 sets forth an acoustic blanket including two heat sealed cover materials at least partially encapsulating at least one sound attenuating panel in combination with a plurality of fastener assemblies connected to a structure to define an air gap between at least portions of the perimeter of the blanket and the structure. Furthermore, the air gap at the perimeter portions is set forth as being at the outer edge of the blanket and provides a separation between the blanket and the structure that is free from any connecting support structure. As discussed below, such structure is not disclosed or suggested by the cited patents alone or even when considered in the proposed combination which Applicant submits is improper.

Nelson, Landi, O'Neill and McCutcheon have been discussed in relevant respects. The Examiner does not assert that these patents, nor do these patents in fact, disclose or suggest a heat sealed cover material at least partially enclosing a sound attenuating panel in combination with a plurality of fastener assemblies so as to provide an air gap at the blanket edge. As
5 discussed above McCutcheon is directed toward a disk drive cover and does not disclose or suggest an acoustic blanket including a heat sealed cover material at least partially enclosing a sound attenuating panel in combination with a plurality of fastener assemblies so as to provide an air gap at the blanket edge. Furthermore, one skilled in the art would not look to the teachings of Nelson, O'Neill Landi, and McCutcheon in light of the significant difference in the problems
10 addressed by these patents and Applicant's invention, as set forth above.

McCutcheon not only lacks a motivation or suggestion to combine, but also teaches away from the claimed invention of utilizing a plurality of fasteners to support an acoustic blanket. As noted above, McCutcheon teaches mounting a rigid disk drive cover 6 on a rectangular solid metallic frame, e.g., the disk drive base 9. (See McCutcheon col. 20, lines 35-37). In contrast,
15 Applicant specifically sought to eliminate the use of "frames" for mounting acoustic blankets on space vehicles. (See Application pg. 2, line 9 to pg 3, line 10).

With regard to McCutcheon, the office action further posits that the use of a plurality of fastener assemblies to control an air gap of pre-determined dimension between an acoustic blanket and a structure is obvious because it is known to use air to enhance sound attenuation. In
20 this regard, the office action posits that an air gap may be chosen to optimize attenuation at a desired frequency. Claim 12, however, recites "a plurality of fastener assemblies to connect the acoustic blanket.... so as to define an air gap..." at the blanket edge which is not taught or suggested by the cited patents.

Therefore, Claim 12 is allowable for at least the reasons that (1) Nelson, Landi, O'Neill and McCutcheon do not disclose the claimed combination of elements, (2) there is no motivation or suggestion to combine the teachings of Nelson, Landi, O'Neill and McCutcheon, and (3) practical considerations counsel against the proposed combination. Claims 13-19 depend from
5 Claim 12 and are therefore allowable for at least the same reasons for allowance of Claim 12.

Independent Claim 20:

With regard to Claim 20, Applicant respectfully requests reconsideration of the outstanding rejection for reasons as variously set forth above, including that Claim 20 requires a
10 structure defining at least a portion of a space vehicle and an acoustic blanket having heat sealed PTFE impregnated fiberglass cover materials at least partially encapsulating at least one acoustic panel in combination with the plurality of fastener assemblies to connect the blanket to the structure defining at least a portion of a space vehicle.

Each of the cited patents have been discussed above. None of the cited patents discloses
15 or suggests any spacecraft structure much less the combination of a spacecraft structure and an acoustic blanket having heat sealed PTFE impregnated fiberglass cover materials at least partially encapsulating at least one acoustic panel in combination with a plurality of fastener assemblies to connect the blanket to the spacecraft structure. Accordingly, the proposed combination does not yield the subject matter of Claim 20. Moreover, the cited patents are not
20 believed to be properly combinable for a variety of reasons as discussed above. Claims 21-27 depend from Claim 20 and are therefore allowable for at least the same reasons for allowance of Claim 20.

Independent Claim 28:

With regard to Claim 28, Applicant respectfully requests reconsideration of the outstanding rejection for, among other things, at least the reasons set forth above with regard to Claim 1. Claim 28 sets forth a method of constructing the acoustic blanket generally
5 corresponding to Claim 1. Thus, for among the various other reasons given, the references clearly do not disclose the method step of: heat sealing first and second PTFE impregnated fiberglass cover materials with a Polyimide foam panel disposed within a cavity defined therein.

Therefore, Claim 28 is allowable for, among other reasons, at least the reasons set forth with regard to Claim 1. Claims 29-32 depend from Claim 28 and are therefore allowable for at
10 least the same reasons for allowance of Claim 28.

Added Claims 34 and 35:

Claims 34 and 35 are added to the application. No new matter is added by this amendment. Claim 34 sets forth the novel combination of an acoustic blanket for space vehicles,
15 comprising first and second cover materials heat-sealed around at least a portion of their perimeters. Disposed within the heat-sealed cover materials is first and second acoustic attenuating panels including at least one barrier ply layer disposed therebetween. Also included is a plurality of fastener assemblies to connect the acoustic blanket to a structure to control a first air gap of pre-determined dimension between a first portion of the acoustic blanket and the
20 structure, and a second air gap of pre-determined dimension between a second portion of the acoustic blanket and the structure. Claim 34 is allowable for, among other reasons, at least the reason that none of the references individually or in any proper combination disclose or teach the combination of Claim 34.

Claim 35 sets forth a method of tuning an acoustic blanket comprising providing first and second cover materials and at least two sound attenuating panels. A perimeter of the first and second cover materials is heat-sealed with the at least two sound attenuating panels disposed within a cavity defined by the heat-sealed first and second cover materials. The method further includes selecting between a first and second location of a barrier ply layer and locating the barrier ply layer in the first location to achieve a first acoustic attenuation characteristic and locating the barrier ply layer in the second location to achieve a second acoustic attenuation characteristic different from the first. Finally, the method includes connecting the acoustic blanket to a structure using a plurality of standoffs to secure the acoustic blanket to the structure so as to define an air gap between at least a perimeter of the acoustic blanket and the structure. Claim 35 is allowable for, among other reasons, at least the reason that none of the references individually or in any proper combination disclose or teach the combination of Claim 35.

Conclusion:

Based upon the foregoing, Applicant believes that all pending and added claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, Examiner Warren is invited to contact the undersigned.

Respectfully submitted,

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